

April 9th 2008, J. Wresnik

Evaluation of the new Cn values for the turbulence model with CONT05 real data

Specifications:

schedules: c0501.skd modified from NGS card 050912XA.NGS

software: OCCAM Kalman (standard solution no gradients)

clk: ASD 1e-14 @ 50 min, random walk + integrated random walk

zwd: Onsala turbulence

Vienna turbulence (standard)

Vienna turbulence new Cn values

wn: observation error of real CONT05 data

Figure 1 shows a comparison between three different turbulence models. The results for the Vienna approach with the new Cn values (Table 2) are shown in red, for the Onsala turbulence in magenta, and for the Vienna approach using the old Cn values the results are shown on black. The CONT05 real data correspond to the blue dots.

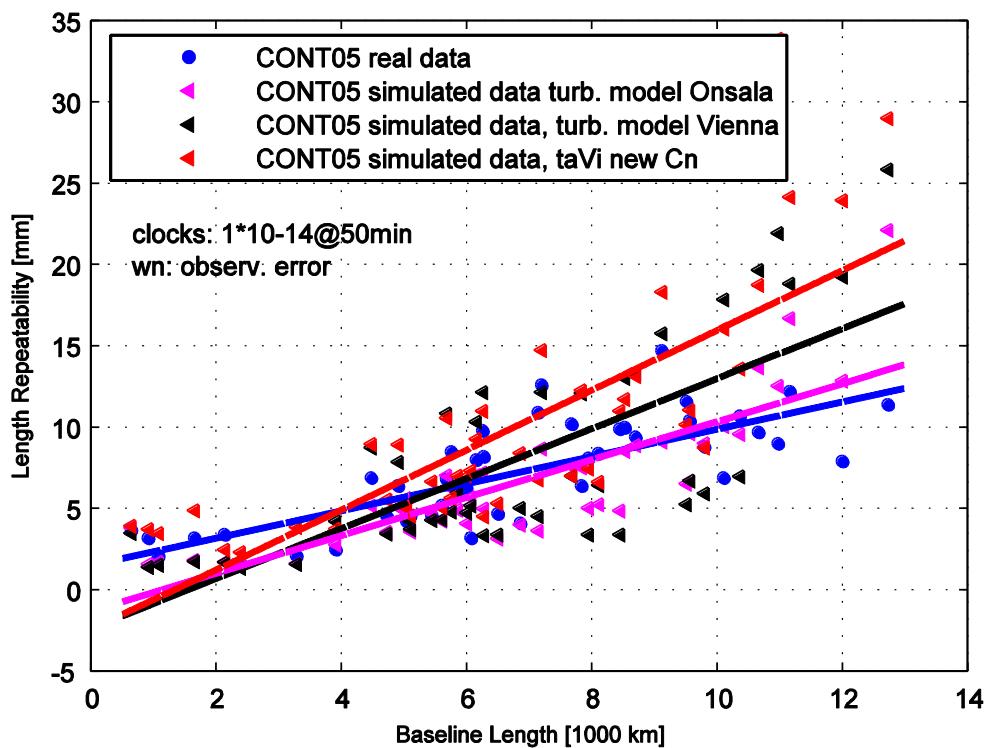


Figure 1: Baseline length repeatabilities for different simulations of zenith wet delay compared to Cont05 real data.

The comparison shows clearly that the baseline length repeatabilities for the turbulence with the new Cn values are not fitting to the real data of CONT05.

The differences to the real data can be seen in figure 2. The mean differences are given in table 1:

Table 1: mean difference

	mean diff. [mm]
<i>Vienna</i> <i>turbulence</i> new Cn	-2.8
<i>Onsala</i> <i>turbulence</i> old Cn	0.6
<i>Vienna</i> <i>turbulence</i> old Cn	-0.8

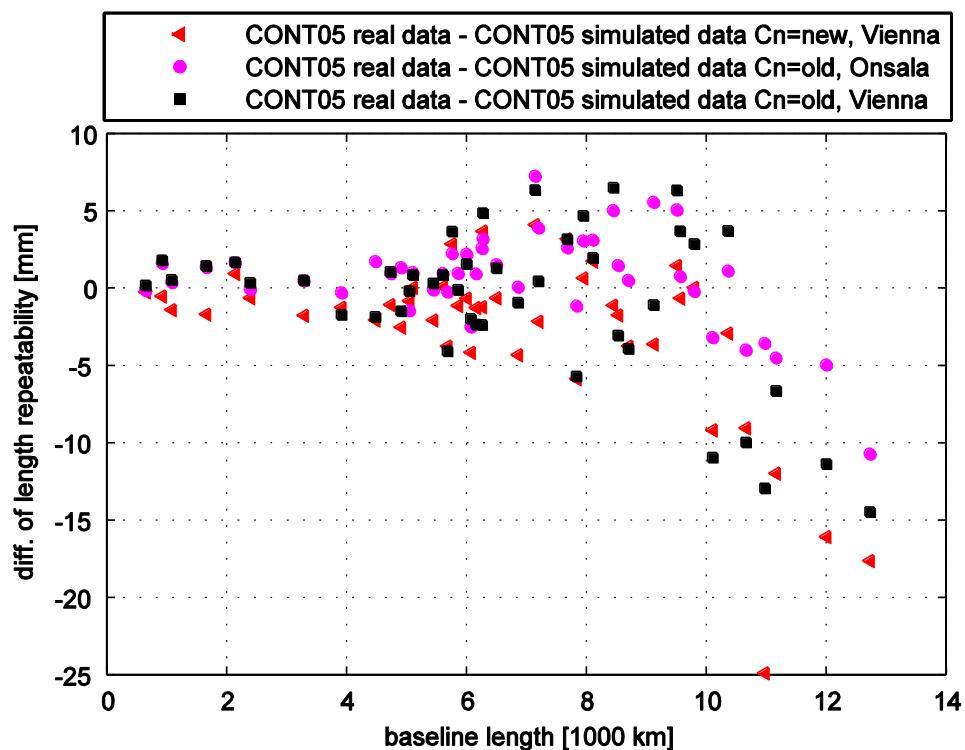
**Figure 2: Differences of baseline length repeatabilities.**

Table 2: Old and new Cn values [$10^{-7} \text{ m}^{-(-1/3)}$], Height [m] and the wind speed [m/s] in North and East.

Station	Cn old	H	Cn new	H	Wind North	Wind East
AP	1.04	2000	2.0573	2573.8	-2.32	9.91
GC	0.55	1963	0.8323	3841.4	-2.72	-12.24
HA	2.03	1851	1.8897	3053.7	7.6	-5.56
KK	2.3	1779	4.0287	2104.7	7.95	8.71
NY	0.35	1845	0.0596	4363.8	3.02	1.97
ON	0.72	2100	1.5438	2929.5	2.57	12.49
SV	0.64	1705	1.384	2631.5	11.12	-1.3
TC	1.41	2176	0.9198	3540.9	8.93	-2.94
TS	1.45	1912	3.7136	2054.9	10.6	-0.3
WS	1.17	2269	3.4378	2288.8	6.01	-10.45
WZ	0.94	1856	4.4662	2238.9	7.25	-7.47